Space Weather Forecast

Issued on Sunday 26 January 2025 at 12:11 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Decreasing Chance of G1 geomagnetic storms Day 1 (26 Jan), ongoing Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been at Low levels, with occasional Common-class flares in the last 24 hours.

There are currently eight sunspot regions visible on the Earth-facing disc. The largest, most active and nominally most complex region is near the southwestern limb. This group has shown fading in its central and trailing portions, but magnetic complexity is difficult to assess due to the difficult viewing angle near the limb. A region in the southwest, whilst still very small, has shown some spot emergence with a north-south aligned magnetic structure which could be more unstable than otherwise indicated. Other regions are relatively small at the present time, however looping on the east limb suggests the potential for more region(s) to rotate onto the disc.

No Earth-directed Coronal Mass Ejections (CMEs) have been seen in the last 24 hours. A filament eruption from the southeast quarter of the visible disc around 26/0000UTC has been modelled as passing well behind the Earth orbit.

Solar Wind / Geomagnetic Activity: The solar wind was at background levels and on a declining trend, 390-310 km/s. The Interplanetary Magnetic Field was weak, with the north-south component varying weakly. Geomagnetic activity was Quiet (Kp 0-1).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected with a chance of isolated Moderate flares, and a slight chance of Strong flares.

Solar Wind / Geomagnetic Activity: A potential CME arrival was expected around 25/1800UTC. Whilst it is later than previously anticipated, an arrival from this feature cannot be ruled out during the remainder of Day 1 (26 Jan). A coronal hole may be emerging in the northwest quadrant of the disc, however any influence from this feature is likely to be limited if at all.

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Quiet to Unsettled activity (Kp 1-3) is likely, but with a decreasing chance of Active to G1/Minor Storm (Kp 4-5) intervals through Day 1 (26 Jan) should any CME arrive, and just a slight, and decreasing, chance of G2-G3/Moderate-Strong Storm (Kp 6-7) intervals.

Energetic Particles / Solar Radiation: There is a slight chance of enhancements exceeding the S1/Minor Radiation Storm threshold, should any larger flares occur from the western hemisphere.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	5	5	5
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	50	50	40	40
Very Active	R3-R5 (X Class)	No	10	10	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	10	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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